

DaimlerChrysler AG

Patent claims

- 5 1. A method for operating the drive train of a motor vehicle, with
- a prime mover (11),
 - a transmission (automatic transmission 15),
 - a power divider (20) actuated by external force
 - 10 and not power-shiftable, and
 - at least one control device (12, 16) for activating the prime mover (11) and the power divider (20),
- a shift being executed by the control device (16) in
- 15 the presence of a shift requirement for the power divider (20),
- characterized in that the control device (16),
- before the commencement of the shift, reduces a torque at the shifting members (23, 24, 25, 26)
 - 20 involved in the shift, and
 - after the conclusion of the shift, again permits a torque at said shifting members (23, 24, 25, 26).
- 25 2. The method as claimed in claim 1, characterized in that
- the transmission (automatic transmission (15) is designed as an automatic transmission (15) which is activated by the control device (16), and the control
- 30 device,
- to reduce the torque at said shifting members (23, 24, 25, 26), interrupts a force flux between the prime mover (11) and the power divider (20) by the opening of a clutch (18),
 - 35 in particular of a clutch (18) in the automatic transmission (15), and,
 - after the conclusion of the shift, restores the force flux by the closing of said clutch (18).

3. The method as claimed in claim 2,
characterized in that
the control device (12, 16)

- 5 - reduces an output torque of the prime mover
 (11) during the shift, and
- permits an increase in the output torque after
 the conclusion of the shift.

10 4. The method as claimed in claim 1, 2 or 3,
characterized in that

- the motor vehicle has an activatable brake
 system (45),
- 15 - the control device (16) monitors the speed of
 the motor vehicle and/or variables derived from
 this during a shift of the power divider (20),
 and
- the control device (16) activates the brake
 system (45) as a function of a result of the
20 monitoring.

5. The method as claimed in claim 4,
characterized in that,
if a false direction of travel is detected, the control
25 device (16) activates the brake system (45), in
particular to the standstill of the motor vehicle.

6. The method as claimed in claim 4 or 5,
characterized in that, if a difference of the current
30 speed from an initial speed of the commencement of the
shift and/or a speed gradient overshoot limit values,
the control device (16) activates the brake system
(45).

35 7. The method as claimed in claim 6,
characterized in that the control device (16) sets a
constant differential speed or a constant speed
gradient.

8. The method as claimed in one of claims 2 to 7,
characterized in that,
in the presence of a shift requirement, the control
5 device (16) calculates a rotational speed of the prime
mover (11) occurring after the shift and carries out a
shift in the automatic transmission (15) or suppresses
the shift requirement as a function of the calculated
rotational speed.

10

9. The method as claimed in claim 8,
characterized in that a permitted range of the
rotational speed of the prime mover (11) after the
shift is determined in the control device (16), and,
15 - if the rotational speed can be brought into
said range by means of a shift of the automatic
transmission (15), the shift of the automatic
transmission (15) and of the power divider (20)
is carried out, and,
20 - otherwise, the shift of the power divider (20)
is suppressed.